RESPONSES TO COMMENTS ABOUT 1998 DOLPHIN ABUNDANCE ESTIMATION

Tim Gerrodette

Feb. 26, 1999

Allen letter of Jan. 14, 1999 to Tillman

This letter does not offer any comments relevant to the 1998 dolphin abundance estimates.

Allen letter of Feb. 3, 1999 to Tillman

The only part of this letter relevant to 1998 dolphin abundance estimates is the 2nd paragraph on p. 1, where it is noted that in the first half of 1998 tuna boats encountered a significant number of offshore spotted dolphins outside the 1998 survey area. If this observation also holds true during late July to early December when the survey took place, it would have implications for the estimate of abundance for western/southern offshore spotted dolphins, but not for any of the depleted dolphin stocks that are the subjects of the preliminary finding.

Allen letter of Feb. 17, 1999 to Tillman

This letter does not offer any comments relevant to the 1998 dolphin abundance estimates.

Twiss letter of Jan. 8, 1999 to Tillman

This letter does not offer any comments relevant to the 1998 dolphin abundance estimates.

Twiss letter of Feb. 12, 1999 to Tillman

Most of the comments in this letter relate to the very preliminary state of the draft analysis and report distributed at the Jan. 21, 1999 meeting. The comments on p. 2, para. 2-5, p. 3, whole para. 1, 2, and 5, and p. 4, whole para. 1 were all addressed by extensive changes in the final report. In response to comments on p. 3, whole para. 3, references to the programs were dropped as unnecessary. The comments on p. 3, whole para. 4 reflect a misunderstanding of the estimation process. The relevant text has been rewritten to be clearer, but double counting, even if it did occur, should not inflate the population estimates as the sampling was conducted.

Buckland e-mail comments of Jan. 26, 1999

#1 is a comment for future cruises but does affect the present analysis. #2 is also largely a comment for the future, but it should be noted that observers are already instructed to delay their measurements of angle and distance until they feel they are getting accurate values. Work done after the meeting shows that there is evidence of rounding of angles by some observers; work on this will continue. #3 is a comment for future work. #4 has been corrected in the final report.

Burnham e-mail comments of Feb. 5, 1999

Paragraph re p. 3: Issues concerning unidentified sightings are discussed below at some length.
Paragraph re p. 7: This comments concerns refinement of future analysis and survey design.
Paragraph re p. 7, bottom: Again, issues concerning unidentified sightings are discussed below.
Paragraph re p. 5: Again, this is discussed at length below.

Laake e-mail comments of Jan. 22, 1999

Para. 1: Proration by abundance of animals is used in the final report.
Para. 2: This long paragraph proposes a new method for dealing with unidentified sightings that is original and seems promising, but will require more time for development.

Comments arising from review meeting of Jan. 21, 1999
page numbers refer to Olson and Gerrodette, 1999 report on review meeting

p. 5-6: coastal spotted and offshore spotted sightings were treated separately in final report; also only sightings in Beaufort 0-3 were used.
p. 7, para. 2: done
p. 7, para. 5: eastern spinner analyses were partially stratified
p. 7, para. 6: as suggested, all spinners were included and a geographic stratification was used.
p. 8, para. 2-3: truncation of 3 km was used for unidentified dolphins; estimation by difference is discussed below.
p. 9, para. 6: dealing with mixed schools in this way is a longer term issue
p. 9, last para.: done
p. 10, para. 2: proration was based on abundance in final report
p. 10, para. 3: done
p. 10, para. 4-6: this is not necessary now that proration is based on abundance
p. 10, para. 7: done
p. 10, para. 9: this is for future work
p. 10, para. 10: done

One of the main concerns raised at the review meeting was how to deal with unidentified sightings. In general it was agreed that the abundance of dolphins represented by unidentified sightings should be prorated among appropriate stocks by estimated abundance of those stocks, and this was done in the final report on 1998 abundance. However, there wass also the issue of how to estimate abundance. The preliminary modeling of detection probability presented at the Jan. 21, 1999 meeting showed poor fits for some categories. It was suggested at the review meeting that estimation of unidentified dolphins by difference should be investigated. That is, an abundance is made of a group of sightings both with and without the unidentified sightings, and the difference will represent an estimate of the unidentified category. This was investigated after the meeting with unsatisfactory results. The estimates of abundance by difference were much higher (up to an order of magnitude) than direct estimation. Given the number of unidentified sightings, this would imply a much higher school size than would be credible for unidentified sightings. Moreover, the results were unstable in the sense that when the method was applied to

well-estimated categories, such as spotted dolphins in the core area, very different estimates were obtained. Therefore, abundance represented by unidentified spotted, unidentified spinner, and unidentified dolphin sightings were directly estimated as a sighting category. This is justified, at least for use at this time, on several bases: (1) it is comparable to previous ETP dolphin estimates; (2) by truncating sightings at 3 km, the assumption of a uniform distribution of density is more likely to hold; and (3) modeling of the detection probability gave quite reasonable results in the core and outer strata, while the coastal stratum sightings retained a peak of sightings near the trackline. Underlying this method is the idea that estimating the abundance of a category called Aunidentified dolphins@ does make sense. They are small groups of dolphins that behave in certain ways that make them hard to resight and approach for identification. The critical assumption, and one that deserves more work, is that the abundance represented by these sightings should be prorated on an abundance basis equally to all possible dolphins represented by the unidentified category.